Middle cerebral artery aneurysm

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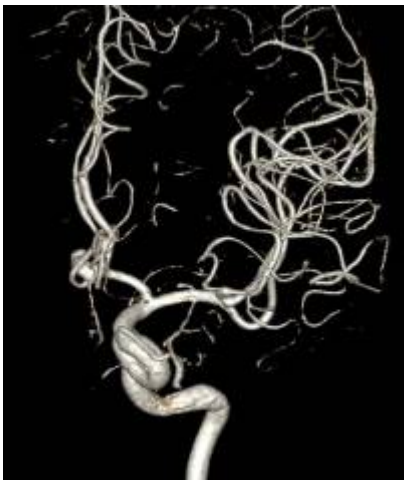

- M3-M3 Bypass and Microsurgical Resection of Giant Previously Coiled Middle Cerebral Artery Aneurysm: 2-Dimensional Operative Video
- Intraparenchymal hemorrhage from infective endocarditis: A case of double trouble
- Targeted Screening of Unruptured Intracranial Aneurysms in Female Smokers: Inconsiderate Overdiagnosis or Chance for Better Health?
- Intra-Sylvian versus intracerebral haematoma associated with ruptured middle cerebral artery aneurysm: initial and follow-up imaging features
- Surgical treatment strategies for intracranial fusiform aneurysms secondary to cardiac myxomas: illustrative case
- A Case of Partially Thrombosed Dissecting Giant Aneurysm in the Distal Middle Cerebral Artery Treated by Endovascular Parent Artery Occlusion
- Ruptured distal middle cerebral artery aneurysm in a pediatric patient: illustrative case
- Perioperative Stroke in MCA Aneurysm Surgery: The Hidden Risks of Amphetamine Use

Epidemiology

Middle cerebral artery aneurysm epidemiology.

Classification

Middle cerebral artery aneurysm classification.

Etiology

Middle cerebral artery aneurysm etiology

Clinical features

Clinical features of MCA aneurysms can vary widely depending on whether the aneurysm is unruptured or has ruptured.

1. Unruptured MCA Aneurysm: Unruptured MCA aneurysms are often asymptomatic and are usually discovered incidentally during imaging studies for unrelated conditions. However, when symptoms do occur, they may include:

Headache: This is typically localized to the area of the aneurysm and can vary in intensity. Visual disturbances: Depending on the aneurysm's location, patients may experience blurred or double vision. Seizures: Compression of brain tissue or irritation from an aneurysm may lead to seizures. Focal neurological deficits: This may include weakness, numbness, or paralysis on one side of the body, speech difficulties, or changes in sensation. These symptoms are due to the aneurysm pressing on nearby brain structures or nerves.

2. Ruptured MCA Aneurysm:

A ruptured MCA aneurysm leads to subarachnoid hemorrhage (SAH), which is a serious medical emergency.

see Subarachnoid hemorrhage clinical features.

Diagnosis

Middle cerebral artery aneurysm diagnosis.

Treatment

see Middle cerebral artery aneurysm treatment.

Outcome

Middle cerebral artery aneurysm outcome.

Systematic reviews and meta-analysis

A updated meta-analysis aimed to compare the safety, efficacy, and clinical outcomes of SC and EVT for uMCAA.

Methods: The authors searched the Medline, Embase, and Cochrane Library databases according to the Cochrane and PRISMA guidelines. Eligible studies included those with ≥ 4 patients with uMCAA reporting comparative data of SC and EVT. The endpoints were the complete occlusion rate (Raymond class I and II), good clinical outcomes (modified Rankin Scale score ≤ 2 or Glasgow Outcome Scale score ≥ 4), procedure-related complications (further divided into major and minor), and mortality. The authors pooled OR with 95% CI values with a random-effects model. I2 statistics were used to assess heterogeneity, and sensitivity analysis was conducted to address high heterogeneity. Publication bias was assessed with funnel plot analysis and the Egger's test.

Results: The analysis included data from 10 studies. Regarding the complete occlusion assessment, the comparative analysis revealed OR 0.17 (95% CI 0.08-0.40, $p < 0.01$), favoring SC. In terms of achieving good clinical outcomes, OR 0.44 (95% CI 0.20-0.97, $p < 0.05$) was determined, favoring SC. No differences regarding total procedure-related complications, major complications, or mortality were identified. However, a higher likelihood of minor complications was identified for EVT, with OR 4.68 (95% CI 2.01-10.92, $p < 0.01$).

Conclusions: This systematic review and meta-analysis identified a lower likelihood of complete occlusion at last follow-up and lower likelihood of good clinical outcomes in patients treated with EVT when compared with SC. Furthermore, a higher likelihood of minor complications was identified in patients who underwent EVT when compared with SC. The findings reinforce that, based on the currently available data, SC should be considered the primary approach for treating uMCAA. However, EVT is an evolving approach, and this study's findings represent a synthesis of observational studies. Randomized trials are warranted to elucidate which approach should be the mainstay for uMCAA and to identify the nuances that determine whether SC or EVT is more or less indicated for addressing uMCAA with consideration of the individuality of each patient and aneurysm [1)].

Case series

see Middle cerebral artery aneurysm case series.

Case reports

Middle cerebral artery aneurysm case reports.

Middle cerebral artery aneurysm case reports from the General University Hospital of Alicante

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A 47-year-old male with vascular risk factors but of dyslipidemia, dilated cardiomyopathy, and ongoing investigation for chronic diarrhea by Gastroenterology. The patient was admitted for spontaneous subarachnoid hemorrhage, presenting with symptoms of myoclonus in the right hemibody, tonic deviation of the gaze, and jaw stiffness while asleep.

Upon emergency evaluation, a Glasgow Coma Scale (GCS) of 14 points was noted. Initial studies revealed aneurysms in the anterior communicating artery and the right middle cerebral artery. Urgent endovascular treatment was performed for the anterior communicating artery aneurysm, followed by craniotomy and clipping for the right middle cerebral artery aneurysm.

The patient was monitored with follow-up exams, demonstrating post-surgical changes in a cranial CT, normalization of intracranial hemodynamic parameters, and aneurysm exclusion in a follow-up angiogram. Around the 26th day of admission, the patient presented in good general condition, without headache, ambulating without incidents, and with adequate oral tolerance. Afebrile with stable vital signs and no focal deficits were noted. The surgical wound was in the process of healing, with staples already removed.

Complete antibiotic treatment was administered for bacteremia. The Doppler control indicated normalization of intracranial hemodynamic parameters. A follow-up angiography confirmed aneurysm exclusion.

In summary, the patient experienced spontaneous subarachnoid hemorrhage due to the rupture of a right middle cerebral artery aneurysm, successfully treated with both endovascular and surgical procedures. The patient showed favorable progress in subsequent check-ups.

A 43-year-old male was admitted for a sudden loss of consciousness and found unconscious on the floor by coworkers. On arrival of the emergency medical services (SAMU), Glasgow Coma Scale was assessed at 4 points (O:1, V:1, M:2), and urgent orotracheal intubation was performed using rapid sequence induction. The patient was subsequently transferred to another hospital.

Upon arrival, the patient had reported isocoric and reactive pupils. A non-contrast cranial CT scan was performed: Areas of subarachnoid hemorrhage in the basal cisterns and bilateral cerebral sulci, with intraventricular hemorrhage in the lateral ventricles and fourth ventricle. Ventricular size within normal limits.

Modified Fisher Grading Scale for Subarachnoid Hemorrhage IV and Hunt and Hess Stroke Scale V. Further evaluation included a cerebral CT angiography, which identified a 5mm left sided middle cerebral artery aneurysm (MCA). The patient was initially admitted to the ICU, where a right internal jugular central venous catheter and a right radial artery catheter were inserted.

During transportation (sedation and analgesia with propofol and morphine chloride), the patient experienced a sudden desaturation episode with fasciculations, and 50 mg of rocuronium was administered. Upon arrival, the patient was under the effects of sedation (propofol and fentanyl) and neuromuscular relaxation (rocuronium), with normal reactive isocoric pupils. Intravenous nimodipine treatment was initiated, and an external ventricular drain was placed by the Neurosurgery team, left

open to a pressure of 15 cm H2O.

The right femoral artery was punctured using an 8 French introducer sheath. Angiographic series and rotational 3D study were performed from the common carotid artery (CCA), confirming a wide-necked dysplastic aneurysm in the terminal intracranial segment of the CCA, involving the carotid artery and the carotid T. Flow through the anterior communicating artery (ACOA) was observed.

Endovascular treatment was decided with a 1.4 mm diameter device with a maximum diameter of 3.7 mm. A dose of Inyesprin was administered intravenously. A guiding catheter was positioned in the cervical CCA. A bolus of tirofiban was given, and perfusion was initiated.

The left M2 segment was catheterized using a 027 microcatheter. The flow diverter was partially deployed. The aneurysm sac was catheterized using a micro guide and an SL10 microcatheter. The flow diverter was deployed, covering the neck of the aneurysm. The first three coils were deployed, and on the control series, bleeding was observed from the previous rupture area of the dome, where one coil loop had come out. Blood pressure was lowered, and the aneurysm was completely filled with the remaining coils mentioned above. The bleeding was confirmed to have stopped. The flow diverter was fully deployed. A non-contrast Dyna CT was performed, which did not show an increase in the previous subarachnoid hemorrhage. Intraprocedural bleeding was limited to medial temporal perianeurysmal bleeding. No mass effect was observed.

Upon removal of the microcatheter, a rupture of the proximal part was observed due to tension from the pusher against the key. It was completely removed.

The control series showed proper embolization without a residual neck. The flow diverter was fully deployed and well-positioned.

He developed a Staphylococcus epidermidis ventriculitis

1)
Ferreira MY, Batista S, Oliveira LB, Marques GN, Maia HG, Palavani LB, Andreão FF, Borges PGLB, Semione G, Sousa MP, Besborodco RM, Bertani R, Serulle Y, Ferreira C, Langer D. Comparing surgical clipping with endovascular treatment for unruptured middle cerebral artery aneurysms: a systematic review and updated meta-analysis. J Neurosurg. 2024 Aug 2:1-11. doi: 10.3171/2024.4.JNS24343. Epub ahead of print. PMID: 39094183.